CRUCIAL ROLE OF WEATHER IN FARM PLANNING IN GANDAK COMMAND AREA

Juhi Kumari,
Researcher,
Deptt of Geography
B.R.A. Bihar University,
Muzaffarpur

ABSTRACT:

With a grain production of more than 3 70 million tonnes 2018 India enjoys the status of being one of the fourth largest food producer in the world, but its planners are far from optimistic about the future growth and sustainable development of the agricultural sector. One nagging question that worries the farmer, the man in the street, and the government alike is the impact of weather on food production. Vagaries of weather are perceived as a threat of food security of the country and Bihar. In order to reduce the impact of the uncertainties of weather and for taking advance preventive measures to contain weather triggered crop production risks, there is a need to invest continuously in meteorological research and development as it is vital to the sustainability of agriculture.

Prompt and well-planned action and land use policies based on detailed climate information should lead to productive and sustainable agriculture. It is imperative that a start is made by linking weather indicators to crop production .

INTRODUCTION:

Agriculture is the life line of the people of India in general and North Bihar in particular. Because more than 86% population live on agriculture. Here agriculture is not merely an occupation rather a tradition since immemorial time. Here nothing can move until agriculture moves and it can not move unless weather supports its . Hence plants growing successfully is any situation are in complete harmony with the factors of their environment and weather is the most important constituent of it.

Weather and development:

The patterns of weather occurring in any region or country are connected to those elsewhere over areas the size of continents. Nowhere is the concept of 'oneness' of environmental natural resources better demonstrated than in the behaviour of the atmosphere, and in the progression of our daily weather and the resulting patterns of climate. The ravaging impacts of El Nino may be cited as an example.

The India Meteorological Department (IMD) is the apex weather adhering organization of the country Daily, 3, 5 , 10 day or seasonal forecasts are issued by it. This unique

service is intended to provide information to all those millions of farmers, who for a multiplication to all those millions of farmers, who for a multiplicity of economic, social and crop-related seasons, each day adapt some of their farm activities to the variations of weather.

While considerable progress has been make, several questions still remain unanswered. Some of these questions are: Are the current activities of the weather service adequate? What are the elements of weather related information necessary for sustaining agricultural production? Is relevant meteorological and hydrological information is given to the farmer to support sustainable agriculture.

Newly emerging issues in sustainable development include sustained agricultural production, security of food for the burgeoning population, environmental safety for clean air and water, and the maintenance of an acceptable quality of the global atmosphere.

Millions of farmers seek weather information each day for one main reason-to help them make on farm management decisions that may range from the seemingly trivial cutting of grass, to one that could lead to crop disasters, pesticide spray. All weather observations are complementary and may be imagined as a part of the ever changing crop environment; therefore these have to be observed and recorded at short intervals. Afterwards, these observations (for pieces of information) are put together for a series of locations and predictions are made on regional weather patterns for a day of for periods extending to several days.

The main links in the chain connecting the national weather system are a sequential sets of meteorological observations. This chin can be described as local/regional weather observations-numerical weather predictions and forecasts-interpretation of weather effects on crops-individual farmers and community actions to contain weather impacts.

As the weather monitoring and prediction technology is growing fast the complexities of the system linking rational weather services to local meteorological offices, the agricultural universities and the mass media are also increasing. However, farmers get some general advice on weather for their region but often they just ignore it as it is not presented in the user-friendly or practical mode.

Current status:

The meteorological office and the climatologists at large should be justifiably proud that 5-day weather forecasts-a dream 20-30 years ago-are now a routine practice in India. These achievements, in some ways, rank alongside other attainments of the space age. Such forecasts given on an operational basis have saved millions of lives through warnings of cyclones, floods, and other severe weather events. For example, the tropical cyclones worldwide account for 20 per cent of the weather related losses.

Thanks to the disaster preparedness schemes, and in particular the provision of timely warnings to the public, the losses of life due to weather-led disasters are on the decline.

The India Meteorological Department and the World Meteorological Organization have jointly conducted activities during the International Decade for National Disaster Reduction (IDNDR). There is now increasing realization that in the developing countries, the setback due to weather disasters have serious socially disruptive and economic consequences and that it takes a long time to put things back in the normal order.

There are two types of weather related impact that get media and public attention. The first includes extreme weather events such as cyclones or hurricanes. Because of their ferocity such phenomena leave a trail of human misery. They get immediate political attention worldwide. The recently damage caused by cyclone in North Bihar, Jharkhand and Orissa may be cited as examples.

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The second type of extreme weather events is related to high or low amounts of rainfall. Such events cause flooding of fields and the countryside and wash away top soil, crops and homes. Low amount of rainfall cause droughts which reduce crop yields and result in water scarcity.

In both types of weather-led disasters, knowledge based risk management rather than crisis management tools should be applied.

The IMD has archived over 100 years of daily weather records for some 150 locations spread across the country out of which three centers are in North Bihar. These data sets have been thoroughly analyzed to assess stochastically the return period of extreme weather events. Maps showing risks period of extreme weather events. Maps showing risks in different weather related disasters and their frequency are readily available.

The main question is whether or not any operational use of the information is made. For example, the coastal areas of Andhra Pradesh, Tamil Nadu and Orissa located on the Bay of Bengal are highly prone to cyclone or hurricane damage.

A study commissioned by the Andhra Pradesh Government in 2008-09 recommended that in the coastal areas shelter belts be planted , that the house construction materials and designs be changed forth with, and the communication networks be strengthened. The progress in this regard has however been slow. It is time that losses due to weather risks are taken more seriously and a phased programme is initiated to developed. a strong infrastructure in the cyclone-prone areas, People's participation is essential in any such programme.

A Similar line of argument can be built for flood or drought affected regions of Bihar. A landscape watershed (soil and water) conservation approach fine-tuned to different agro-typologies of the country needs to be firmly put in place so that excess water (received enduring

high rainfall years) is properly conserved over or below ground. This water can then be used during drought periods for years) to sustain production.

New Challenges:

There are a few areas where meteorologists can play an important role in sustaining the development of our agriculture.

Intensifying meteorological data collection and use in high potential areas: There are about 100 "green revolution" districts where crop yields are at least 4-5 times the yields under traditional agriculture. In these regions. even with minor deviations from the normal weather, the efficiency of the externally applied inputs, groundwater quality, and food security is seriously impaired.

For example, out of a total of 134 districts in the India gangetic plains (IGP) where rice-wheat is a popular cropping system, in 17 districts the two crop productivity average 6.91 ha; and in another 38 it average 4.7 t/ha. In this region the first critical meteorological input is the date of onset of the monsoon season. Each day's delay in transplanting rice after July 1 reduces the yield by about 70 kg /ha.

Similarly it has been observed that the amount of solar radiation at the reproductive stage of the rice crop is highly significant for the grain yield and must range between 9 and 21 M.J per day. Excessive flooring at the grain filling stae together with high velocity winds could damage the rice crop and reduce yield by 20-30 per cent.

It is suggested that in this set of 55-odd green revolution IGP-districts there is an urgent need to establish a highly dense network of agro meteorological stations equipped with automatic weather recording devices so that crop-related advisories are disseminated to the farmers district by district on real time basis.

Further, in these districts fertilizer use exceeds 250 kg/ha in terms of plant nutrients. The nitrogen use efficiency at the farm level hardly exceeds 40-50 per cent in the rice crop. It has been experimentally shown that a correct prediction of high rainfall events could save at lest 20 kig N/ha without reducing the crop yield. Since the total area covered under rice in these districts is 5 m ha, even a conservative saving of 10 kg N/has will since one lakh tones of rues.

Similar savings in energy (for lifting water) and precedes can be achieved if reliable locally application weather predictions are operationally availed Investment in weather services has always proven to be cost effective.

Climatic information is invaluable baseline data for Infrastructure development in rained agriculture. Since a wide range of water management practices with differing goals in relation to crop production and conservation appropriate to different natural resource regimes and economic

circumstances are available, to be effective these have to be tempered with appropriate climatic information.

As the study area stands poised to enter the 3rd decades to face many challenges related to environment degradation. Loss of soil erosion occurs due to improper ways of managing our land and water resources. In areas where wind corrosion is a major problem it is essential that complete data on wind profiles from the soil surface to 5-10 m height are available on a continuous basis (at 15 min to 30 min intervals).

Similarly, for areas exposed to water erosion rainfall intensity and volume data should be made operationally available. Such data are now collected by automatic rain gauging stations in 'A' class observatories, but because these are not available in digitized formats in the study region these are rarely used by agricultural development agencies for operational scale application.

Now that India has adopted UNCED's Agenda 21, the conservation and appropriate use of natural resource will be key Indicators of sustainable development in the coming years. The meteorological services will be called upon to play an active role in the development of eco-technological innovations and introduction of sustainable livelihoods.

Dr. M.S. Swami Nathan, whose Foundation was awarded the 1996 Blue Planet. Prize, and recently that "In spite of the political will and public understanding generated at Rio de. Janitor in 1992, the world is still witnessing continued damage to basic life support sys teems of land, forests, biodiversity, oceans and the atmosphere". In the author's view, the meteorological office can under gird a science led approach to solve many of the inter-linking natural resource rotated agricultural problems basic to life support systems.

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